YUKON-CHARLEY RIVERS NATIONAL PRESERVE

CENTRAL ALASKA NETWORK

Vegetation Monitoring Program

Summary Trip Report: Joseph Creek Mini-grid

17 June – 26 June, 2009

Photo 1: Looking north-west across the grid from between points 2 and 3. The ridge on the far right contains the highest elevation in the mini-grid.

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PURPOSE:

The purpose of this trip was to install and measure 25 permanent vegetation plots in the Joseph Creek minigrid as part of the long term vegetation monitoring program in Yukon-Charley Rivers National Preserve. Our work in these plots followed the protocols developed by the Central Alaska Network (CAKN) long term vegetation monitoring program (see Roland *et al*. 2005). This was the fourth season of vegetation monitoring work for the program in Yukon-Charley National Preserve.

PERSONNEL:

Pete Del Zotto—Crew lead; plot and quadrat variable estimates; vascular plants collection and tentative field identifications; transect recorder

Haig Diradourian—transects; plot photography; tree and sapling measuring; tree coring.

The crew operated with only two people for the entire trip. Kara Thies, the third member, was ill and unable to be in the field.

ACCESS TO MINI-GRID AND CAMPING POSSIBILITIES:

Access

The Joseph Creek mini-grid is at the southern boundary of the Preserve in the headwaters of the Charley River. Travel to this area began in Fairbanks and involved 2 flights: 1) A fixed wing flight from Fairbanks to an air strip in the Preserve at Coal Creek, about 200 km and 2) A helicopter flight from Coal Creek to the field location, about 80 km. The fixed wing portion was a chartered flight through Wright Air Service using a Cessna 206 aircraft. The crew arrived at the Fairbanks airport at 9:15 am and reached Coal Creek about 11:40 am, with the actual flight time being about 1 hour and 10 minutes.

Crew gear for 2 people—personal, camping, sampling— was weighed at 385 pounds. This, along with only 2 passengers, meant there was no taxing of the plane's payload (about 1300 pounds which includes fuel).

The helicopter flight to the field site lasted 40 minutes. A Hughes 500 aircraft was used. The helicopter became available to us at about 12:30 pm after a morning of transporting other field crews in the area. Two round-trips from Coal Creek to the field site were needed in order to transport all personnel and gear. The initial flight landed us at the field site at 1:30 pm. The second flight carrying the remaining gear landed at 3:15 pm.

Camping

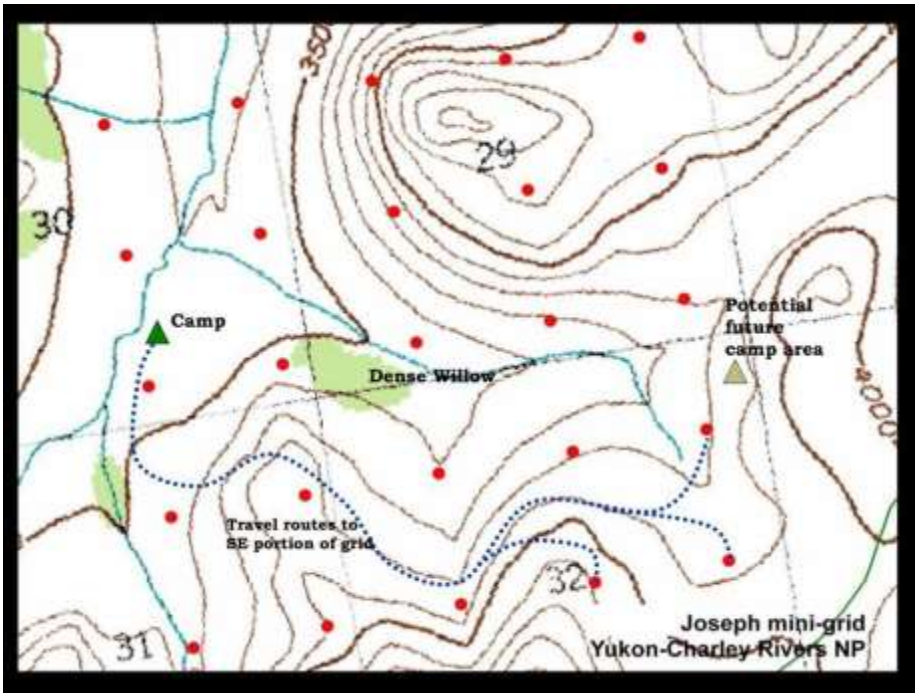
Camp was established on the west edge of the grid about 200 meters north of point 15. While scouting from the helicopter it was clear there was no suitable landing site near point 13. Dense willow covers the lowlands here and the nearest clearings were on hillside scree that were too steep for a landing. The tent site was a small rise in the terrain, perhaps 3 meters above the adjacent willow thickets and standing water. The helicopter landing zone was less about 50 meters away to the northwest in a small damp meadow.

Photo 2: The kitchen area looking north. The tent campsite can be seen in the distance near a lone spruce tree.

The camp kitchen was placed to the south about 100 meters in a small clearing at the base of a shallow ridge, adjacent to an old stream bed. Water availability was good—a remarkably clear perennial stream about 50 meters to the west. Alternate campsites were discussed by the crew given the travel consequences of camping so far from the center of the grid (see "Future Considerations").

HIKING:

The study area encompasses a small drainage that runs roughly east-west. Traveling low in this drainage, and also on the hillside drainages that feed into it, is impeded by tall, dense willow thickets and wet ground. Our travel routes (Map 1) made use of ridges and high routes to reach the distant points. Climbing a short ways above the valley bottom gives way to dense, but less inhibiting shrubbery in the form of *Betula nana*, with hillsides punctuated with wet, willow-choked draws. A few hundred feet higher brings significantly less dwarf-birch and a gentler slope.



Map 1: Travel routes used to access the south-east portion of the mini-grid

Among the disadvantages of our camp location was its low elevation, meaning that most days required significant climbing to reach work destinations. This could be remedied somewhat by the use of a higher camp on the east side of the grid. Our travel was limited to the southern half of the grid therefore some of the northern points were entirely out of view. It's likely the main challenge in traveling to the northeastern points is steep terrain; for the northwestern plots, willow, shrubs and water.

WEATHER AND ENVIRONMENTAL CONDITIONS:

The early season visit to this mountainous area exposed us to the widest range of weather of any trip in 2009. A consistent daily weather pattern existed when high pressure covered the area. Mornings were mostly sunny and humid, and warmed quickly. The day's high temperature would occur about 1 pm. Thunder clouds built-up in the late morning and obscured the sun by early afternoon. Often rain started at this time with electrical storms visible within a few miles. The showers were spotty and lasted until 5 or 6 pm. On these days temperatures ranged between evening cold in the 30s to daily highs in the upper 60s to low 70s (sometimes accompanied by high humidity).

Rain occurred on eight days; it rained heavily on two days. The hardest rain was caused by a front that brought significant rain to much of interior Alaska. This front was cold, dropping mid-day temperatures to the mid-40s, and included some frozen precipitation.

Mosquitoes were thick during warmer (mid 50s plus) temperatures and calm winds. Head nets and bug repellant were needed at times. No other biting insects were evident.
Only the higher north exposures carried snow, most significantly near points 2 and 3 although this was not an important factor in safety or travel.

Photo 3: View from camp to the south-east. The nearest ridge was ascended several times to the right (south, just out of view) to gain easier travel to the south-east.

SAFETY CONSIDERATIONS:

We got cold a couple of time on this trip! The cold rain was a potential safety issue for us, and it highlighted the important advice we were given to bring warm layers, hat and gloves. Ultimately, it was really more of an inconvenience. We spent one afternoon taking hourly breaks to run up-and-down hills to keep warm in a cold, windy downpour. Dryness is warmth, and having a few bread sacks to cover dry polypro liner gloves allowed me to at least write with a pencil.

Bears can be an issue in this area, even though we saw none on our trip. The tall, thick willow provided almost no visibility. Stumbling upon a bear while hiking through this stuff would be scary indeed. Even the simple back-and-forth to the dining tent meant keeping armed with pepper spray and making the usual vocal racket to identify oneself.

I don't feel any of the terrain we covered was a safety issue for a competent hiker, but points 22 and 23 look to be on steep ground. Those particular points would best be saved for stable footing on a dry day.

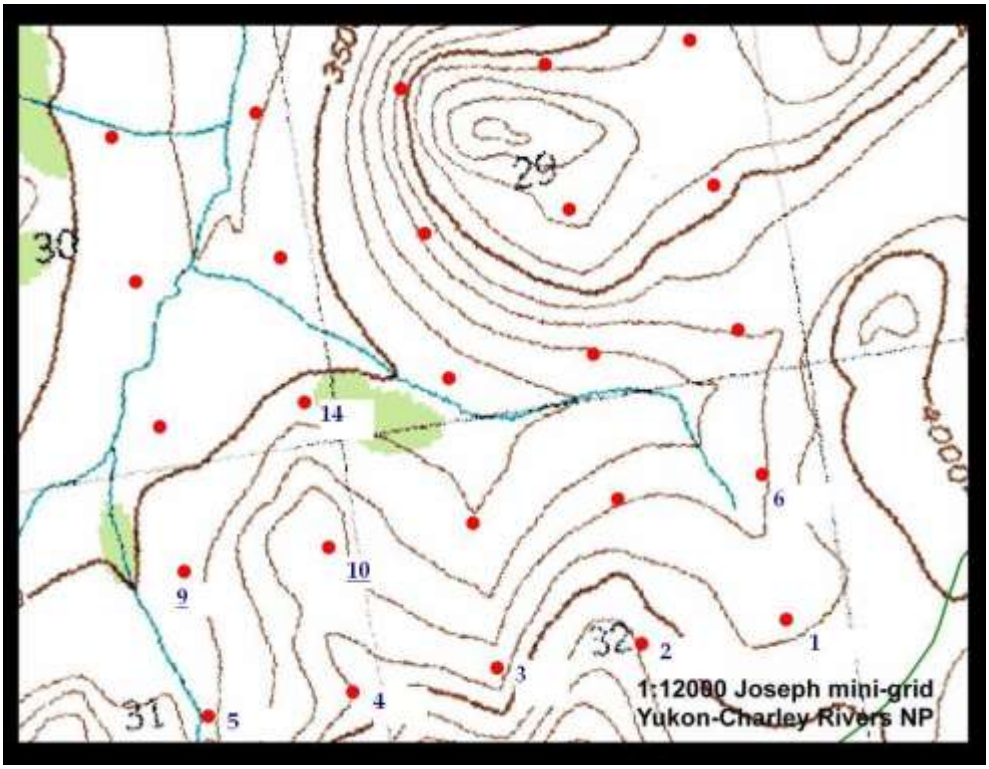
PHENOLOGY OBSERVATIONS:

For the portion of the grid we saw, it was early for most plants to be in flower. Some of the expected early season plants were in bloom--*Anemone*, *Stellaria*, *Silene*, *Salix*, etc. Very few *Ericaceae* individuals were in bloom. It seemed that **peak** bloom for this area was still a couple weeks off in 2009. We did not work on any south facing slopes where one would expect phenology to be further along.

GENERAL NOTES ON PLOT-WORK AND PLOT OBSERVATIONS:

Important for future crews is to be aware of the situation with Points 9 and 10. In the field, the data for these were mistakenly entered into the tablet PC reversed—the data for point 9 entered as point 10 and vice-versa. Data was *not* re-entered to correct this but rather the decision was made to reverse the point numbers *on the ground.* All data sheets labeled point 9 refer to the place on the ground that, in a normal grid number scheme, is considered point 10, and vice-versa (see Map 2).

Only two people were available to work on this grid. The third crew member fell ill the day prior to departure and the decision was made to forego the assigned tasks of this person—soils and non-vascular measurements—for the entire field visit.



Map 2: As described in the text, the numbering scheme of the grid was changed as points 9 and 10 are now reversed. All points completed in 2009 are numbered.

As we were brand-new to the project, this grid was baptism-by-fire. Only nine points were completed partially because we only had two people working, along with it all being new. Production was hampered primarily by this inexperience. Decisions such as initially choosing distant plots (a good plan for seasoned crews) were not practical for our situation. Unfamiliarity with techniques and vegetation made our time on plots seem very long. Plant phenology was early and much time was spent searching for collection specimens in bloom. We carried considerable extra weight of equipment each day—pounds of laminated sheets, extra batteries, field guides, etc—until we learned what things could stay at camp. Our first few days involved the most distant and strenuous terrain, traveling with packs easily exceeding 50 lbs. It was a great week of conditioning.

By chance, our field visit coincided with military air exercises in the area. The peak moment came during the final field plot, a close range sonic boom that delivered an unforgettable jolt.

Table 1: Collection Series for the Joseph Strip mini-grid

Collector	Identifier	Series
Del Zotto	Vascular plants	PDZ-09-001 to PDZ-09-80
Diradourian	Digital Photos	100-0056 to 100-226
Diradourian	Tree Cores	JH-10A,B JH-14A,B,C,D
--	Soils	Not sampled
--	Nonvascular collections	Not sampled

Wildlife

A notable aspect to Yukon-Charley is the apparent lack of wildlife, at least visible large mammals during this year. Indeed, we saw no bear or moose. Fresh bear scat was observed twice. A small herd of Caribou was observed within about 40 meters of plot 2. Voles were seen several times, scurrying at close range as we walked through the shrubs. Birds were abundant however. Robins and White-crowned sparrows were common and nesting in the area. The incessant call of snipes was present every night.

ACTIVITES:

Table 2: Synopsis of activities on the Joseph Creek grid:

Date	Grid day	Activity
June 17	1	Fly Fairbanks to Coal Creek; Coal Creek to study area; set-up camp
June 18	2	Begin point 6
June 19	3	Complete point 6, begin point 1
June 20	4	Complete point 1, begin point 2
June 21	5	Complete point 2, begin point 3
June 22	6	Complete point 3, begin point 4
June 23	7	Complete points 4 and 10
June 24	8	Complete points 5 and 9
June 25	9	Complete Point 14
June 26	10	Morning fly-out, arrive Fairbanks 2:45 pm

Day1: Wednesday, June 17 Travel

We received word in the morning about Kara being unable to join the crew. Carl asked Haig and I if we were comfortable in attempting the minigrid by ourselves, which we were. A quick discussion about food ensued then we resumed loading the truck.

We arrived at Wright Air 9:15 am. The flight left at about 10:25 am, arriving at Coal Creek about 11:40 am. The helicopter flight was 40 minutes to the field site, and touched down about 1:30 pm. The second flight carried all our sampling and most camping gear and arrived at 3:30 pm. We set-up camp and the kitchen, organized our gear and discussed our strategy for sampling.

Day 2: Thursday, June 18 Point 6

We decided on the conventional wisdom of sampling distant points first and decided on point 6. With only two people we felt that sampling the north east part of the grid was just too

distant. Travel time was very long as we took the low route through a lot of willow. We eventually climbed above the will, continuing east, then approaching point 6 from the southwest.

Point 6: Centered on a W-SW slope on a hillside of consistent slope and aspect for over 400 meters. It is about 100 meters below a broad saddle and quite exposed. Caribou scat seen within 10 meters of plot.

Weather: Afternoon shower after morning thunder-head build up, high upper-60s.

Day 3: Friday, June 19 Point 1

We changed our travel route to one that became standard for the remainder of the trip. We headed south from camp, crossed east through the shrubs to the closest prominent ridge, climbed it, then side-hilled to the east in open terrain to the south-east portion of the grid.

Point 1: It is on a gentle, even north facing slope that contains thickets dominated by either willow or dwarf-birch. Point is dominated (75%+) by *Salix pulchra* with an average height of 2 meters. No standing water, but numerous damp areas with sphagnum.

Weather: Afternoon shower after morning thunder-head build up, high upper-60s.

Day 4: Saturday, June 20 Point 2

Point 2: On a NE aspect and situated immediately below a convex bend in slope. Within about 40 meters of a ridge top and very exposed. Dwarf shrubs dominate with infrequent *Betula nana* never taller than 25 cm. Most frequent dwarf-shrub is *Loiseleuria procumbens.* Dryas or other ericaceous dominated patches contain the broader hillside. A herd of 18 caribou approached within 100 meters as we worked on the plot.

Photo 4: Looking west through point 4, the most diverse vegetation sampled in the grid.

Day 5: Sunday, June 21 **Point 3**

Point 3: Situated high in a north facing draw at 1169 meters elevation, about 50 meters below the upper limit of dwarf-birch. This upper valley terrain has a "moguled" texture with mounds 5-15 meters long and 1-2 meters tall. Shrub dominated with *Betula nana* and *Salix.*

Weather: Rain all last night. Today cool (50s) and mostly dry.

Day 6: Monday, June 22 **Point 4**

Point 4: This is a lush and diverse alpine setting. This site is moist, low angle, west facing and above tree line. There are few features in the terrain, yet the slight rises and depressions of just a few centimeters contain quite different plants (*Carex* dominant in the depressions and *Empetrum* dominant on the rises). There is a small amount of standing water adjacent to the plot. The dwarf shrub cover is right about 25%, so it could be interpreted as a Viereck herbaceous/graminoid community (and these communities are adjacent to the plot).

Day 7: Tuesday, June 23 **Point "10"**

Point 10: In the standard mini-grid numbering scheme this would be considered point 9, but as explained above, it is now considered point 10. It is tree-less, exposed and on top of a broad ridge that is north of a prominent saddle. Soils are fast draining and coarse. There are few plant species, especially forbs. The dwarf-birch appears to be sculpted somewhat by the wind.

Weather: A cold, wet day. Temperature in the low 40s, hard afternoon rain with some frozen precipitation, steady 15 mph wind.

Day 8: Wednesday, June 24 **Points 5 & "9"** **9 ¾ hours**

Point 5: Travel to this point from camp was direct with minor interference from shrubs. It is about 15 meters from the most significant stream in the area and on the west side of a small ridge. This ridge appears to separate the current stream channel from a prior one. It is dominated by *Betula nana* and *Ledum decumbens*. The cover of dwarf-birch is close to 75% so this area could be interpreted as a closed dwarf-birch community as well. Just beyond the plot to the west is a tall willow community.

Point 9: Travel here from point 5 was a straight forward across a side-hill with fairly open walking. Again, this point location would normally be labeled as point 10, and the discrepancy is explained above in lurid detail. It is situated on a west facing hillside among several hectares of sparse white spruce, some of which reach 16 meters tall. The hill is dominated by *Betula nana* with dense patches of willow intermixed.

Weather: Cold rain again last night with fresh snow about 200 meters above camp. Rain tapered off in the morning with some afternoon sun. Highs upper 50s.

Day 9: Thursday, June 25 **Point 14** **12 ½ hours**

Point 14: This plot is in white spruce woodland with trees in the area up to 14 meters tall. About 20 meters north-east of the plot is a tall willow shrub type that exceeds 1 hectare. Tall willow is also a large component on the plot but with the added feature of 10%+ spruce cover.

Weather: Sunny, dry, high 70.

Day 10: Friday, June 26 Travel 10 ¼ hours

Travel to Fairbanks. Two helicopter flights, the first arriving at 9:30 am. Crew and gear were in Coal Creek at about noon. The fixed wing aircraft arrived about 1 pm and departed with crew and gear about 1:30 pm, arriving in Fairbanks at 2:45 pm. Afternoon in Fairbanks was spent preparing for the next trip.

CONCLUSIONS AND FUTURE CONSIDERATIONS:

Camping options here seem to be at the perimeter of the grid which makes for longer average travel distances over most of the area. Camping near the center of the grid would require moving gear by foot through dense vegetation from a landing zone over 500 meters away.

A more efficient possible alternative to this would be to work from two different camps during a field visit. One idea is for the helicopter to *drop off* items needed for a minimal camp on the east side, including two or three nights of food and water. There is decent camping terrain near point 6, and travel in the east side of the grid from here would be very efficient. This arrangement would eliminate the need to entirely pack-up and relocate camp, plus it minimizes the amount gear transported by foot between camps. Of course, bringing extra gear such as sleeping bags and tents would be advantageous, but not entirely necessary (the dining tent say, could be used as crew sleeping quarters).

REFERENCES CITED:

Roland, C.A., Oakley, K., Debevec, E. & Loomis, P. (2005) Monitoring vegetation structure and composition at multiple spatial scales in the Central Alaska Network. National Park Service, Central Alaska Network, Final Monitoring Protocol.